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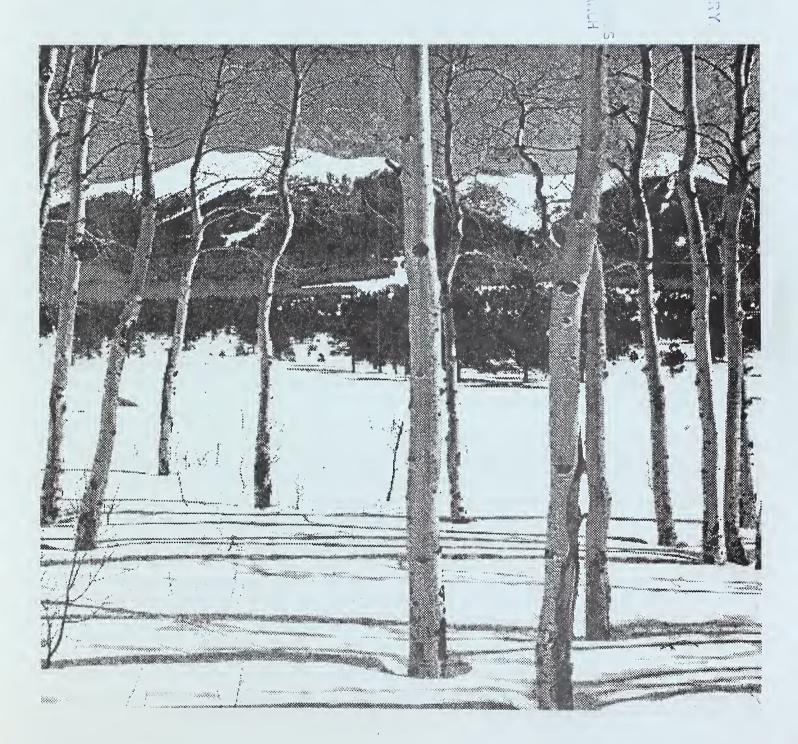


United States
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# Washington Basin Outlook Report January 1, 1993



# Basin Outlook Reports and Federal - State - Private Cooperative Snow Surveys

For more water supply and resource management information, contact:

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How forecasts are made

Most of the annual streamflow in the Western United States originates as snowfall that has accumulated high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are combined with snowpack data to prepare runoff forecasts. Streamflow forecasts are coordinated by Soil Conservation Service and National Weather Service hydrologists. This report presents a comprehensive picture of water supply conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data, and narratives describing current conditions.

Snowpack data are obtained by using a combination of manual and automated SNOTEL measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation and temperature are monitored on a daily basis and transmitted via meteor burst telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.

Forecast uncertainty originates from two sources: (1) uncertainty of future hydrologic and climatic conditions, and (2) error in the forecasting procedure. To express the uncertainty in the most probable forecast, four additional forecasts are provided. The actual streamflow can be expected to exceed the most probable forecast 50% of the time. Similarly, the actual streamflow volume can be expected to exceed the 90% forecast volume 90% of the time. The same is true for the 70%, 30%, and 10% forecasts. Generally, the 90% and 70% forecasts reflect drier than normal hydrologic and climatic conditions; the 30% and 10% forecasts reflect wetter than normal conditions. As the forecast season progresses, a greater portion of the future hydrologic and climatic uncertainty will become known and the additional forecasts will move closer to the most probable forecast.

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# **Interpreting Streamflow Forecasts**

#### Introduction

Each month, five forecasts are issued for each forecast point and each forecast period. Unless otherwise specified, all streamflow forecasts are for streamflow volumes that would occur naturally without any upstream influences. Water users need to know what the different forecasts represent if they are to use the information correctly when making operational decisions. The following is an explanation of each of the forecasts.

Most Probable (50 Percent Chance of Exceeding) Forecast. This forecast is the best estimate of streamflow volume that can be produced given current conditions and based on the outcome of similar past situations. There is a 50 percent chance that the streamflow volume will exceed this forecast value. There is a 50 percent chance that the streamflow volume will be less than this forecast value.

The most probable forecast will rarely be exactly right, due to errors resulting from future weather conditions and the forecast equation itself. This does not mean that users should not use the most probable forecast; it means that they need to evaluate existing circumstances and determine the amount of risk they are willing to take by accepting this forecast value.

## To Decrease the Chance of Having Too Little Water

If users want to make sure there is enough water available for their operations, they might determine that a 50 percent chance of the streamflow volume being lower than the most probable forecast is too much risk to take. To reduce the risk of not having enough water available during the forecast period, users can base their operational decisions on one of the forecasts with a greater chance of being exceeded (or possibly some point in-between). These include:

70 Percent Chance of Exceeding Forecast. There is a 70 percent chance that the streamflow volume will exceed this forecast value. There is a 30 percent chance the streamflow volume will be less than this forecast value.

90 Percent Chance of Exceeding Forecast. There is a 90 percent chance that the streamflow volume will exceed this forecast value. There is a 10 percent chance the streamflow volume will be less than this forecast value.

# To Decrease the Chance of Having Too Much Water

If users want to make sure they don't have too much water, they might determine that a 50 percent chance of the streamflow being higher than the most probable forecast is too much of a risk to take. To reduce the risk of having too much water available during the forecast period, users can base their operational decisions on one of the forecasts with a smaller chance of being exceeded. These include:

30 Percent Chance of Exceeding Forecast. There is a 30 percent chance that the streamflow volume will exceed this forecast value. There is a 70 percent chance the streamflow volume will be less than this forecast value.

10 Percent Chance of Exceeding Forecast. There is a 10 percent chance that the streamflow volume will exceed this forecast value. There is a 90 percent chance the streamflow volume will be less than this forecast value.

# Using the forecasts—an example

Using the Most Probable Forecast. Using the example forecasts shown below, users can reasonably expect 36,000 acre-feet to flow past the gaging station on the Mary's River near Deeth between March 1 and July 31.

Using the Higher Exceedance Forecasts. If users anticipate a somewhat drier trend in the future (monthly and seasonal weather outlooks are available from the National Weather Service every two weeks), or if they are operating at a level where an unexpected shortage of water could cause problems, they might want to plan on receiving only 20,000 acre-feet (from the 70 percent chance of exceeding forecast). In seven out of ten years with similar conditions, streamflow volumes will exceed the 20,000 acre-foot forecast.

If users anticipate extremely dry conditions for the remainder of the season, or if they determine the risk of using the 70 percent chance of exceeding forecast is too great, then they might plan on receiving only 5000 acre-feet (from the 90 percent chance of exceeding forecast). Nine out of ten years with similar conditions, streamflow volumes will exceed the 5000 acre-foot forecast.

Using the Lower Exceedance Forecasts. If users expect wetter future conditions, or if the chance that five out of every ten years with similar conditions would produce streamflow volumes greater than 36,000 acre-feet was more than they would like to risk, they might plan on receiving 52,000 acre-feet (from the 30 percent chance of exceeding forecast) to minimize potential flooding problems. Three out of ten years with similar conditions, streamflows will exceed the 52,000 acre-foot forecast.

In years when users expect extremely wet conditions for the remainder of the season and the threat of severe flooding and downstream damage exists, they might choose to use the 76,000 acre-foot (10 percent chance of exceeding) forecast for their water management operations. Streamflow volumes will exceed this level only one year out of ten.

		HUMBOLDT								
			STREA	MFLOW	FORECAS 7	rs				
		1	ER FU				1			
FORECAST POINT	FORECAST PERIOD	1 90%								
MARY'S RIVER nr Deeth	MAR-JUL	5.0	20.0	36	77 I	52	76	47		
MARY'S RIVER nr Deeth	MAR-JUL APR-JUL	5.0 8.0	20.0 l 17.0 i	36 31	77 I 74 I	52 45	76 67	47 42		
MARY'S RIVER nr Deeth  LAMOILLE CREEK nr Lamoille										
	APR-JUL	8.0	17.0 i	31	74	45	67	42		

For more information concerning streamflow forecasting ask your local SCS field office for a copy of "A Field Office Guide for Interpreting Steamflow Forecasts".

# Washington Water Supply Outlook

# January 1993

## **General Outlook**

JANUARY 1, 1993: The snowpack varies from 94% in the Skagit River Basin to 164% in the Green Basin. Washington SNOTEL sites averaged 108% of normal snowpack on January 1 (BY JANUARY 8, THE STATEWIDE AVERAGE WAS 125%). December precipitation was 82% of normal state wide, and varied from 64% of average in the Walla Walla Basin to 100% in the Spokane Basin. Year-to-date precipitation varies from 94% in the Walla Walla to 74% in the Okanogan Basin. December temperatures were below normal and varied from 1 degree above in the Walla Walla Basin to 5 degrees below in the Yakima Basin. With the below normal temperatures in December, streamflows varied from 80% of normal on the Wenatchee River to 28% on the Walla Walla River. January 1 reservoir storage is generally poor throughout the state, with reservoirs in the Yakima Basin at 32% of average and 18% of capacity. Forecasts for 1993 runoff vary from 85% of average for the Snake River to 98% for the Spokane River

# Snowpack

There were only a few manual snow courses read this month, so the majority of snowpack information comes from the SNOTEL system. The January 1st reading showed 108% and this increased to 116% by the 11th of January. Snowpack varies over the state, with the north being near normal and increasing to the Oregon border. The Green River Basin had the highest with 164% of average, and the Cowlitz-Lewis Basin had 160% of normal. The Skagit River Basin, with 94% of average, was the lowest. Snowpack along the east slopes of the Cascade Mountains includes the Yakima with 116%, and the Wenatchee 104%. Snowpack in the Okanogan is at 114%, and the Spokane at 118%. Maximum snow cover is at Paradise on Mount Rainier, with a water content of 31.8 inches. This site would normally have 28.9 inches of water content on January 1.

# **Precipitation**

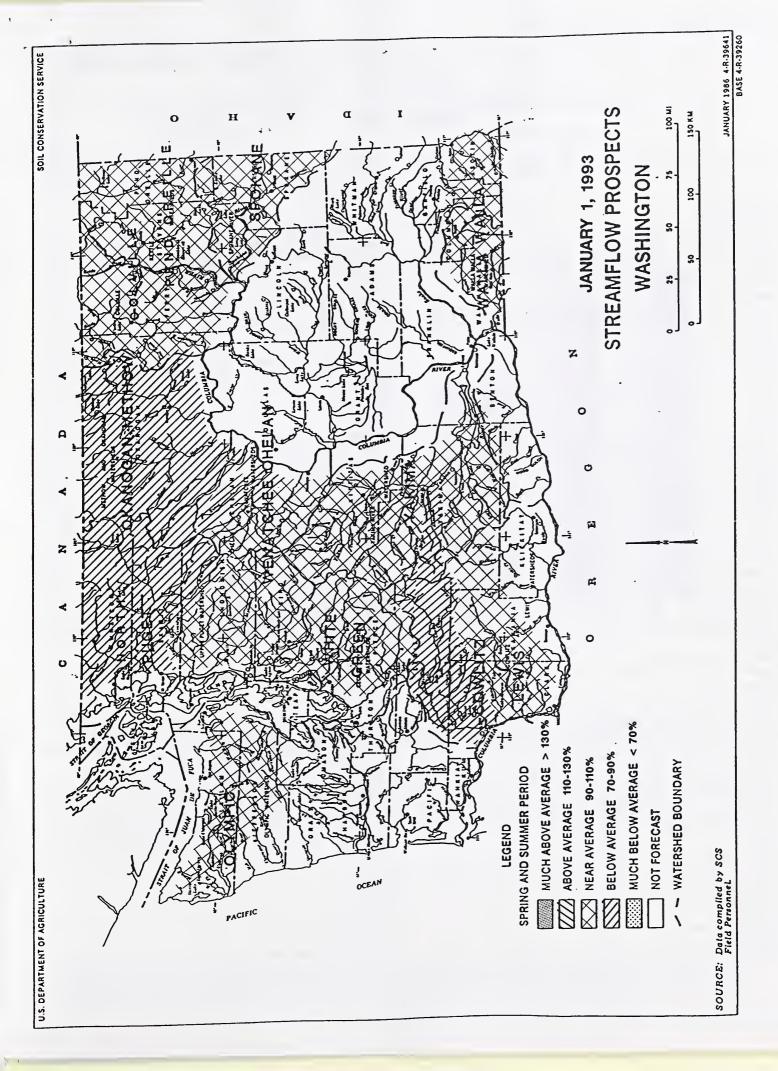
December precipitation reported from National Weather Service stations was 82% of average statewide. The year-to-date precipitation statewide is 83% and varied from 94% of normal in the Walla Walla Basin to 74% in the Okanogan-Methow Basin. December precipitation varied from 100% of average in the Spokane Basin, to 64% in the Walla Walla Basin. SNOTEL sites in Washington showed high elevation year-to-date precipitation values to be 87%. Maximum year-to-date precipitation was at the June Lake SNOTEL site near Mt. St. Helens, with 51.6 inches since October 1, 1991; normal for this site is 65.5 inches.

#### Reservoir

Reservoir storage in Washington is much below average for January 1. Cold weather has reduced the streamflow entering the reservoirs. Reservoir storage in the Yakima Basin was 187,100 acre feet, 32% of normal. Storage at other reservoirs include Roosevelt at 86% of average, and the Okanogan reservoirs at 89% of normal for January 1. The power generation reservoirs contain the following: Coeur d'Alene Lake, 44,500 acre feet, or 34% of normal; Chelan Lake, 335,700 acre feet, 89% of average and 51% of capacity, and Ross Lake at 87% of average, and 49% of capacity.

#### Streamflow

December streamflows were below average in Washington. The Wenatchee River at 80% was the highest and the South Fork Walla Walla River with 28% was the lowest in the state, . Other streamflows were the following percentage of normal: the Cowlitz River, 42%; the Okanogan River, 65%; the Spokane River, 45%; the Columbia at the Canadian border, 85%. and the Yakima River at Kiona 47%. Forecasts for summer streamflow are for below to near average and vary from 98% of average for the Spokane River to 85% of normal for the Snake River. January forecasts for some west side streams include: Cedar River, 94%; Green River, 91%; and the Dungeness River, 92%. Some east side streams include the Yakima River at Parker, 90%; the Wenatchee River at Peshastin, 91%; and the Colville River, 96%.

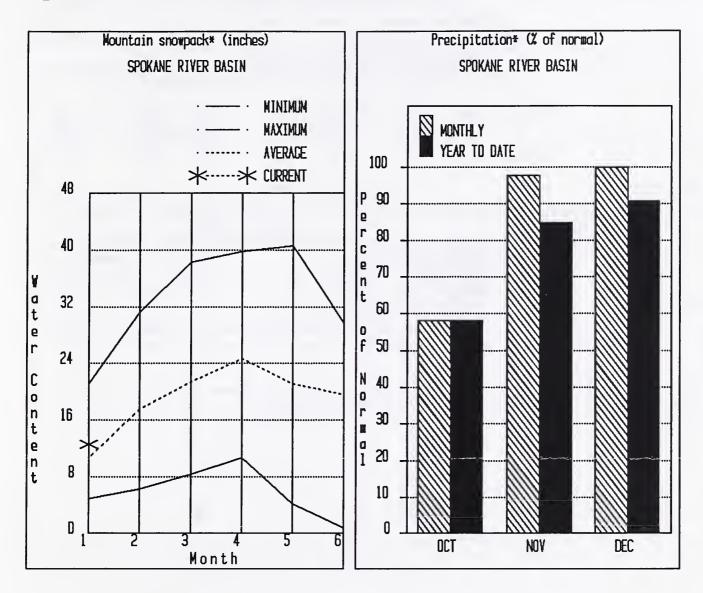


# BASIN SUMMARY OF SNOW COURSE DATA

# JANUARY 1993

SNOW COURSE	ELEVATIO	N DATE	SNOW DEPTH		LAST YEAR	AVERAGE 1961-90	SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-90
PEND OREILLE RIVER							YAKIMA RIVER						
BENTON MEADOW	2370	12/30/92	28	5.5	1.6	2.7	AHTANUM R.S.	3100	1/03/93	35	7.5	2.0	3.5
BENTON SPRING	4920	1/01/93		7.0E	7.2	8.0	BLEWETT PASS 2PILL		1/01/93		7.78	5.7	8.3
BUNCHGRASS MDWPILLO	W 5000	1/01/93		10.7	11.4	10.9	BUMPING RIDGE PILL	W 4600	1/01/93		11.85	8.2	9.6
HOODOO BASIN	6050	1/01/93		19.8E	21.5	20.4	CORRAL PASS PILL	OW 6000	1/01/93		16.45	15.3	13.5
HOODOO CREEK	5900	1/01/93		17.0E	18.3	18.0	FISH LAKE	3370	12/29/92	57	13.9	13.4	10.7
NELSON CAN	i. 3100	12/29/92	38	6.0	6.8	7.2	FISH LAKE PILL	O₩ 3370	1/01/93		13.38	12.6	12.4
KETTLE RIVER							GREEN LAKE PILL	0000 W	1/01/93		11.38	7.3	9.0
BARNES CREEK CAN	5300	1/06/93	45	11.1	9.8	8.7	GROUSE CAMP PILL	OW 5380	1/01/93		7.85	9.3	8.9
BIG WHITE MTN CAN	5510	12/30/92	44	10.4	8.3	7.2	LAKE CLE ELUM	2200	12/28/92	16	4.3	.7	3.9
FARRON CAN		12/31/92	29	5.6	5.7	9.9	MORSE LAKE PILL		1/01/93		21.58	20.4	19.1
MONASHEE PASS CAN	4500	1/06/93	33	8.5	6.7	6.2	OLALLIE MDWS PILL		1/01/93		22.45	16.0	20.3
COLVILLE RIVER							SASSE RIDGE PILL		1/01/93		17.58	14.5	12.4
OMAK LAKE, TWIN LAKES							STAMPEDE PASS PILL		1/01/93		23.75	17.1	16.7
SPOKANE RIVER	2200	12/20/02	46	0.6	2.0	2.4	TUNNEL AVENUE	2450	12/28/92	32	7.8	2.2	8.1
FOURTH OF JULY SUM	3200	12/30/92	46	8.6	2.0	3.4 23.6	WHITE PASS ES PILLA AHTANUM CREEK	OW 4500	1/01/93		11.38	8.2	9.8
LOST LAKE (d MOSQUITO RDG PILLO	=	1/01/93		24.1E	27.9 15.7		AHTANUM R.S.	2100	1/02/02	25			
MOSQUITO RDG PILLO SUNSET PILLO		1/01/93		13.1 14.7	16.8	15.7 15.8	GREEN LAKE PILL	3100 W 6000	1/03/93 1/01/93	35	7.5 11.3S	2.0	3.5
NEWMAN LAKE	3340	1/01/93		24.7	10.0	13.0	MILL CREEK	J# 0000	1/01/93		11.35	7.3	9.0
QUARTE PEAK PILLO	W 4700	1/01/93		11.4	5.8	8.5	HIGH RIDGE PILL	W 4980	1/01/93		16.15	10.9	9.7
RAGGED RIDGE	3330	1/01/93		4.98	.5	3.8	TOUCHET \$2 PILL		1/01/93		17.6	14.2	12.9
OKANOGAN RIVER	2000	-,,					LEWIS - COWLITZ RIVER		2,02,75		17.0	11.1	12.7
ENDERBY CAN	. 6200	1/03/93	71	16.5	13.3	18.6	JUNE LAKE PILLA		1/01/93		31.35	3.7	11.5
GREYBACK RES CAN	. 5120	12/30/92	32	6.1	3.8	3.1	LONE PINE PILLS		1/01/93		18.05	8.3	12.0
HAMILTON HILL CAN	. 4890	12/31/92	32	6.9	5.8	8.4	PARADISE PARK PILLS	W 5500	1/01/93		31.85	29.3	23.6
HARTS PASS PILLO	W 6500	1/01/93		16.55	22.2	17.9	PIGTAIL PEAK PILLOW	5900 1/	01/93	2	0.15 19	.2	20.1
ISINTOK LAKE CAN	. 5500	12/31/92	25	5.3		3.5	POTATO HILL PILL	W 4500	1/01/93		15.48	8.4	10.5
MCCULLOCH CAN	. 4200	12/30/92	30	5.2	3.0	3.2	SHEEP CANYON PILLS	W 4050	1/01/93		25.78	9.9	15.2
MISSEZULA MTN CAN	. 5090	12/30/92	23	4.2			SPENCER MDW PILLA	W 3400	1/01/93		19.98	5.0	9.4
MISSION CREEK CAN	. 5800	1/04/93	47	11.5	8.6	8.9	SPIRIT LAKE PILLA	W 3100	1/01/93		13.25	.2	1.8
MONASHEE PASS CAN	. 4500	1/06/93	33	8.5	6.7	6.2	SURPRISE LKS PILLA	W 4250	1/01/93		27.28	16.0	20.2
MT. KOBAU CAN	. 5900	12/27/92	30	6.8	4.4	6.3	WHITE PASS ES PILLA	W 4500	1/01/93		11.35	8.2	9.8
SALMON HDWS PILLO	W 4500	1/01/93		5.28	4.1	3.9	WHITE RIVER						
SILVER STAR MIN CAN	. 6000	1/02/93	57	17.0	11.4	13.4	CORRAL PASS PILLS		1/01/93		16.45	15.3	13.5
SUMMERLAND RES CAN		12/30/92	30	6.3	4.4	4.5	MORSE LAKE PILLA	W 5400	1/01/93		21.55	20.4	19.1
WHITE ROCKS MIN CAN	. 6000	12/30/92	49	11.6	8.5	11.6	GREEN RIVER						
METHOW RIVER							COUGAR MTN. PILLO		1/01/93		14.75	4.8	8.3
HARTS PASS PILLO		1/01/93		16.55	22.2	17.9	LESTER CREEK	3100	1/01/93	51	14.4	5.2	8.0
	4500 1/	/01/93	-	5.25	1.1	3.9	LYNN LAKE	4000	1/01/93	52	15.8	8.8	7.6 13.3
CHELAN LAKE BASIN LYMAN LAKE PILLO		1/01/02		22.45	20.0	25.4	SAWMILL RIDGE	4700	1/01/93	57	17.2	9.3	16.7
LYMAN LAKE PILLO MINERS RIDGE PILLOW	₩ 5900 6200	1/01/93 1/01/93		23.45	28.8	25.4	STAMPEDE PASS PILLA TWIN CAMP	W 3860 4100	1/01/93	59	23.7S 19.3	17.1 9.8	10.0
PARK CK RIDGE PILLO		1/01/93		20.25 18.05	7.9 23.9	18.4	CEDAR RIVER	4100	1/01/93	39	17.3	3.0	10.0
RAINY PASS PILLO		1/01/93		15.55	21.3	15.4	SNOQUALMIE RIVER						
ENTIAT RIVER	. 1700	1,01,75		13.30	21.5	13.4	OLALLIE MDWS PILLO	W 3960	1/01/93		22.45	16.0	20.3
POPE RIDGE PILLO	W 3540	1/01/93		7.85	9.7	9.1	SKYKONISH RIVER	5500	2,02,75				
WENATCHEE RIVER		2, 02, 70			,,,	7.1	STAMPEDE PASS PILLO	W 3860	1/01/93		23.75	17.1	16.7
BERNE-MILL CREEK (d	) 3170	12/31/92	42	12.1	9.1	11.2	STEVENS PASS PILLO		1/01/93		20.65	20.6	15.3
BLEWETT PASS 2PILLO	-	1/01/93		7.78	5.7	8.3	STEVENS PASS SAND S		12/31/92	61	15.2	13.6	14.6
CHIWAUKUM G.S.	2500	12/31/92	28	5.0	2.8	4.8	SKAGIT RIVER						
FISH LAKE PILLO		1/01/93		13.35	12.6	12.4	HARTS PASS PILL	W 6500	1/01/93		16.58	22.2	17.9
LYMAN LAKE PILLO	₩ 5900	1/01/93		23.45	28.8	25.4	KLESILKWA CAR	. 3710	1/06/93	24	5.0	6.7	
MERRITT	2140	12/31/92	27	6.5	2.3	7.1	LYMAN LAKE PILLO	W 5900	1/01/93		23.45	28.8	25.4
STEVENS PASS PILLO	W 4070	1/01/93		20.68	20.6	15.3	RAINY PASS PILLO	W 4780	1/01/93		15.58	21.3	15.4
STEVENS PASS SAND S	D 3700	12/31/92	61	15.2	13.6	14.6	BAKER RIVER						
TROUGH #2 PILLO	W 5310	1/01/93		5.05	2.6	4.9	ELWHA RIVER						
UPPER WHEELER PILLO	W 4400	1/01/93		5.78	4.5	5.9	MORSE CREEK						
SQUILCHUCK CREEK							DUNGENESS RIVER						
STEMILT CREEK							QUILCENE RIVER						
UPPER WHEELER PILLO	₩ 4400	1/01/93		5.78	4.5	5.9	HOUNT CRAG PILLO	W 4050	1/01/93		13.25	4.9	
COLOCKUM CREEK							WYNOOCHEE RIVER						
TROUGH \$2 PILLO	W 5310	1/01/93		5.08	2.6	4.9	(d) Denotes discontinue	d site.					

# Spokane River Basin



\*Based on selected stations

The January 1 forecasts for summer runoff within the Spokane River Basin are 98% of normal. The forecast is based on a snowpack that is 118% of average and a water year-to-date precipitation value of 91% of normal. Precipitation for December was 100% of average. Temperatures in the basin were 4 degrees below normal during December. Streamflow on the Spokane River was 45% of average for December. January 1 storage in Coeur d'Alene Lake was 44,500 acre feet, 34% of normal, and 19% of capacity.

#### SPOKANE RIVER BASIN

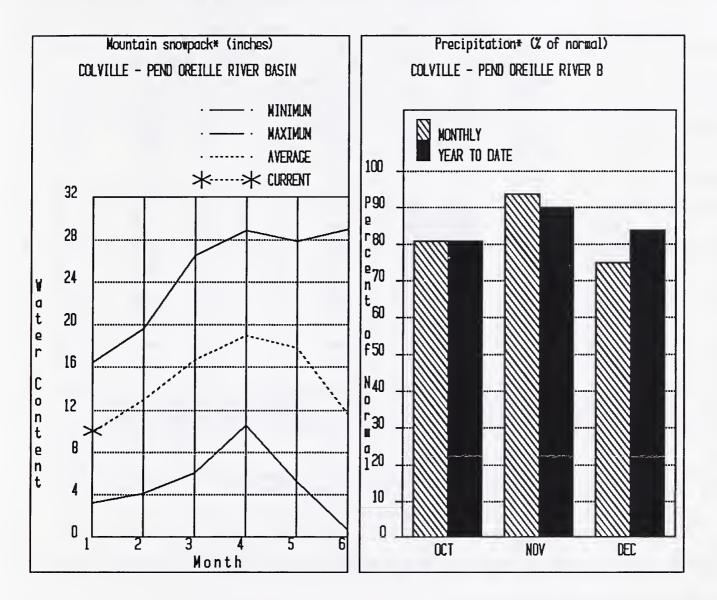
#### Streamflow Forecasts - January 1, 1993

			POKANE RIVI w Forecasts			1993			
Forecast Point	Forecast Period	į	70%	Ch	ance Of E 0% (Most		Wetter   30%   (1000AF)	10%   (1000AF)	30-Yr Avg. (1000AF)
SPOKANE nr Post Falls (1,2)	APR-SEP APR-JUL	950 785	2090 2010		2670 2570	98 98	3250 3130	4410 4360	2720 2627
SPOKANE at Long Lake (2)	APR-JUL				2880	98	 		2937
SPOKANE RIVER BASIN Reservoir Storage (100	0 AF) - End	of December	er		   		RIVER BASIN nowpack Analys	is - Januar	y 1, 1993
Reservoir	Usable   Capacity  		le Storage Last Year	*** Avg	   Water 	rshed	Number of Data Sit		Year as % of Yr Average
COEUR D'ALENE	238.5	44.5	140.6	130.5	Spoka	ne River	6	118	118

<sup>\* 90%, 70%, 30%,</sup> and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
 The value is natural flow - actual flow may be affected by upstream water management.

# **Colville - Pend Oreille River Basins**



\*Based on selected stations

January 1 snow cover is 98% of average on the Pend Oreille, and 111% on the Kettle River. Snowpack at Bunchgrass Meadow SNOTEL site was 10.7 inches of water, the average January 1 reading is 10.9. Precipitation during December was 75% of average, bringing the water year-to-date to 84% of normal. December streamflow was 47% of normal on the Pend Oreille River, 85% on the Columbia at the International Boundary, and 79% on the Kettle River. The forecast for the Kettle River streamflow is 100% of normal, the Pend Oreille, 88%, and the Colville River, 96% of normal for the summer runoff period. Temperatures were six degrees below normal for December.

### COLVILLE - PEND OREILLE RIVER BASINS

#### Streamflow Forecasts - January 1, 1993

		<<====	Drier	Future	Conditions =	Wetter	>>	
Forecast Point	Forecast	!			-			
	Period	90%   (1000AF	70% ) (1000AF)		t Probable) ) (% AVG.)	30%   (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
PEND OREILLE bl Box Canyon (1,2)	APR-SEP	7720	11200	12800	88	   14400	17900	14590
	APR-JUL	7040	10200	11700	87	13200	16400	13380
	APR-JUN	6190	8950	10200	88	11500	14200	11570
CHAMOKANE CK nr Long Lake	MAY-AUG	2.2	6.3	9.1	97	   11.9	16.0	9.4
COLVILLE at Kettle Falls	APR-SEP	61	100	1 126	96	   152	191	131
	APR-JUL	55	91	115	96	140	176	120
	APR-JUN	52	85	107	96	129	162	111
KETTLE nr Laurier	APR-SEP	1040	1510	1850	100	   2190	2690	1853
	APR-JUL	955	1430	1760	100	2090	2570	1760
	APR-JUN	865	1300	1590	100	1880	2310	1585
COLUMBIA at Birchbank (1,2)	APR-SEP	29000	36200	39400	90	   42600	49800	43810
	APR-JUL	23300	29000	31600	90	34200	39900	35140
	APR-JUN	17100	21200	23100	90	25000	29100	25670
COLUMBIA at Grand Coulee Dm (1,2)	APR-SEP	39800	52300	58000	90	[ 63700	76200	64780
	APR-JUL	33600	44000	48800	90	53600	64000	54500
	APR-JUN	26100	34300	38000	89	41700 	49900	42730
COLVILLE - PEND ORE	TITE DIVER	DACTNO		· 	COLUTIER	- PEND OREILL	P DIVED DA	TNC
Reservoir Storage (100			ber			- PEND OREILL nowpack Analys		
	Usable	aeU ***	ble Storage *	**		Numbe	r Thia	Year as % of
Reservoir	Capacity		Last	•	ershed	of		
		Year		lvg		Data Si	tes Last	Yr Average
ROOSEVELT	5232.0	3744.2	4629.4 454	7.9   Col	ville River	0	0	0

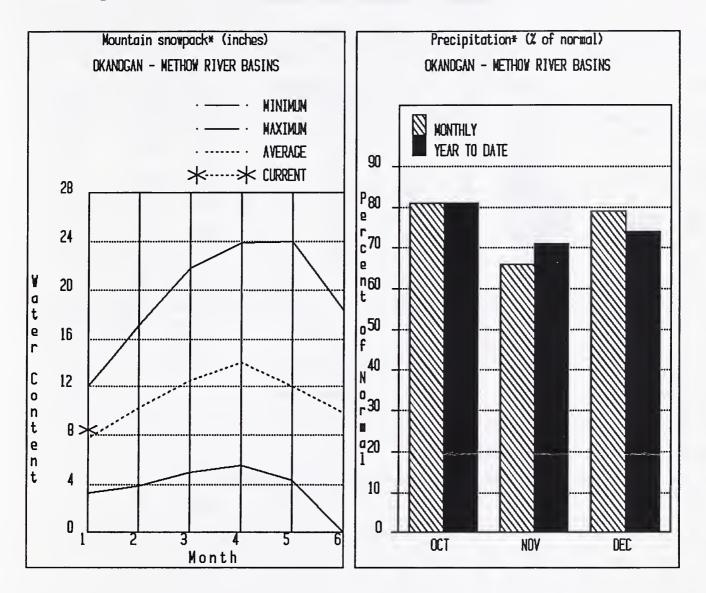
ROOSEVELT	5232.0	3744.2	4629.4	4547.9		0	0	0
BANKS	715.0	688.2	680.2	618.3	Pend Oreille River	6	99	98
					Kettle River	4	117	111

<sup>\* 90%, 70%, 30%,</sup> and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

<sup>(1) -</sup> The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

<sup>(2) -</sup> The value is natural flow - actual flow may be affected by upstream water management.

# Okanogan - Methow River Basins



\*Based on selected stations

January 1 snow cover was 114% of average on the Okanogan, 100% on the Methow, and 82% on the Smilkameen rivers. December precipitation in the Okanogan-Methow was 79% of normal, with water year-to-date at 74% of average. December streamflow on the Methow River was 78% of normal, 65% on the Okanogan River, and 62% on the Similkameen. Snow water content at the Harts Pass SNOTEL, elevation 6500 feet, was 16.5 inches, normal for this site is 17.9inches. Summer runoff forecast for the Okanogan River is 86% of normal; the Similkameen River, 89%, and the Methow River, 87% of normal. Temperatures were six degrees below normal for the month. Storage in the Conconully Reservoir is 11,900 acre feet, which is 51% of capacity and 89% of January 1 average.

#### OKANOGAN - METHOW RIVER BASINS

#### Streamflow Forecasts - January 1, 1993

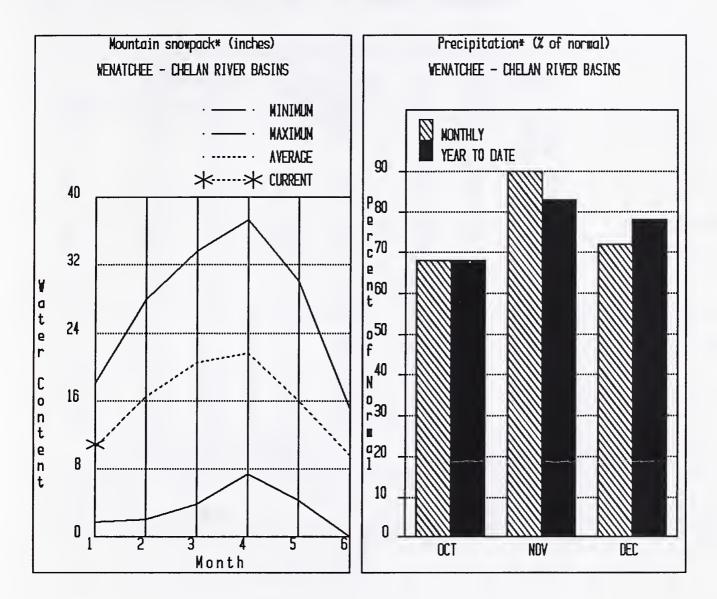
			Drier	Future C	onditions -	Wetter	>>	
Forecast Point	Forecast			- Chance Of	Exceeding *			
	Period	90%	70%	50% (Most	Probable)	30%	10%	30-Yr Avg.
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)	(1000AF)
SIMILKAMEEN nr Nighthawk (1)	APR-SEP	560	1060	1240	89	1420	1920	1399
	APR-JUL	640	1000	1160	89	1320	1680	1304
	APR-JUN	600	870	990	89	1110	1380	1113
OKANOGAN RIVER nr Tonasket (1)	APR-SEP	535	1160	   1390	86	1620	2240	1624
	APR-JUL	610	1060	1260	86	1460	1910	1467
	APR-JUN	565	905	1060	86	1210	1560	1234
METHOW RIVER nr Pateros (1)	APR-SEP	285	635	   815	87	995	1370	942
	APR-JUL	215	590	760	87	930	1300	873
	APR-JUN	200	515	655	88	795	1110	746
okanogan - methow R	IVER BASINS			1	OKANOGAN	- METHOW RIVE	R BASINS	
Reservoir Storage (100	AF) - End	of Decembe	r	<u> </u>	Watershed S	nowpack Analys	is - Januar	у 1, 1993
	Usable	*** Usabl	e Storage *	**		Numbe	r This	Year as % of
Reservoir	Capacity	This	Last	Wate	rshed	of		
	 	Year	Year A	vg   		Data Si	tes Last	Yr Average
CONCONULLY LAKE (SALMON)	10.5	7.3	8.2	7.5   Okan	ogan River	12	123	111
CONCONULLY RESERVOIR	13.0	4.6	7.0	5.9 Meth	ow River	2	83	100

<sup>\* 90%, 70%, 30%,</sup> and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

<sup>(1) -</sup> The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

<sup>(2) -</sup> The value is natural flow - actual flow may be affected by upstream water management.

# Wenatchee - Chelan River Basins



\*Based on selected stations

January 1 snowpack in the Wenatchee Basin is 104% and the Chelan Basin 96%. Snowpack along Colockum Ridge is near normal for the first time in five years, with Stemilt Creek at 97%. Reservoir storage in Lake Chelan is 335,700 acre feet or 89% of January 1 average and 50% of capacity. Lyman Lake SNOTEL had the most snow water with 23.4 inches of water, this site would normally have 25.4 inches. Runoff for the Entiat River is forecast to be 88% of normal for the summer. Summer forecasts for the Chelan River is for 88%, for the Wenatchee River it is 91%, and 93% on the Squilchuck - Stemilt. Streamflow for December on the Chelan River was 61% of average and on the Wenatchee River it was 80% of normal. Precipitation during December was 72% of normal in the basin and 78% for the year to date.

#### WENATCHEE - CHELAN RIVER BASINS

#### Streamflow Forecasts - January 1, 1993

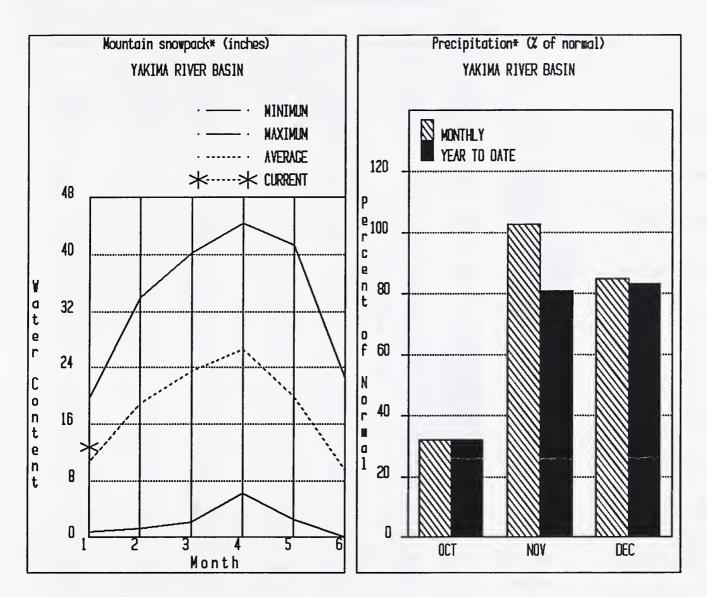
		<<=====	- Drier	== Future C	onditions ==:	Wetter	>>	
Forecast Point	Forecast	   =======	=========	- Chance Of	Exceeding * =			
	Period	90%	70%	50% (Most	Probable)	30%	10%	30-Yr Avg.
	-	(1000AF)	(1000AF)	: '	(% AVG.)	(1000AF)	(1000AF)	(1000AF)
CHELAN RIVER at Chelan (1)	APR-SEP	625	880	1020	88	1160	1420	1160
	APR-JUL	510	780	900	88 1	1020	1290	1024
	APR-JUN	410	620	715	88	810	1020	812
TEHEKIN R. at Stehekin	APR-SEP	540	665	750	91	835	990	827
	APR-JUL	465	570	640	91	710	815	701
	APR-JUN	355	435	490	91	545	625	538
NTIAT RIVER nr Ardenvoir	APR-SEP	131	172	200	88	230	270	227
	APR-JUL	114	153	180	87	205	245	206
	APR-JUN	98	128	149	88	170	200	169
ENATCHEE R. at Peshastin	APR-SEP	865	1250	1490	91	1730	2110	1636
	APR-JUL	810	1130	1350	91	1570	1890	1485
	APR-JUN	665	925	1100	91	1280	1530	1204
TEMILT nr Wenatchee (miners in)	MAY-SEP	79	108	   128	93	148	177	138
CICLE CREEK nr Leavenworth	APR-SEP	225	300	l   355	96	410	485	370
	APR-JUL	205	275	325	96	375	445	340
	APR-JUN	164	220	260	96	300	355	270
OLUMBIA R. bl Rock Island Dam (2)	APR-SEP	43500	55500	   63600	90	71700	83700	70410
	APR-JUL	36900	47000	53900	90	60800	70900	59690
	APR-JUN	29000	36900	42300 	90	47700	55600	46980
THE TOTAL OF THE TOTAL OF THE TAXABLE PROPERTY.				! ====================================				# # # # # # # # # # # # # # # # # # #
WENATCHEE - CHELAN : Reservoir Storage (100			er		Watershed Sno	- CHELAN RIV owpack Analys		y 1, 1993
	Usable		le Storage *			Numbe		ear as % of
eservoir	Capacity	This	Last	:	rshed	of	=====	
	i i	Year	Year A	vg		Data Si		ir Average
HELAN LAKE	676.1	335.7	324.1 37	8.7   Chel	an Lake Basin	3	77	96
				Enti	at River	1	80	86
				Wena	tchee River	9	111	105
				Squi	lchuck Creek	0	0	0
				Stem	ilt Creek	1	127	97
				   Colo	ckum Creek	1	192	102
				1				

<sup>\* 90%, 70%, 30%,</sup> and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

<sup>(1) -</sup> The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

<sup>(2) -</sup> The value is natural flow - actual flow may be affected by upstream water management.

# Yakima River Basin



\*Based on selected stations

January 1 snowpack is 119% based upon 14 snow courses and SNOTEL January 1 summer streamflow forecasts for the Yakima Basin readings. vary throughout the basin as follows: The Yakima River at Cle Elum, 98%; Naches River, 94%; the Yakima River at Parker, 90%, Ahtanum Creek, 88%, and the Tieton River 93%. December streamflows were very low with the Yakima River at Parker 37% of normal, 46% for the Yakima near Cle Elum, and 29% for the Naches River. December precipitation was 85% of normal and 83% for the water year to date. January 1 reservoir storage for the five major reservoirs at 187 100 acre feet, Temperatures were five degrees below average for was 32% of average. Volume forecasts for the Yakima Basin are for natural flow. December. As such, they may differ from the U. S. Bureau of Reclamation's forecast for the total water supply available which includes irrigation return flow.

#### YAKIMA RIVER BASIN

Streamflow Forecasts - January 1, 1993

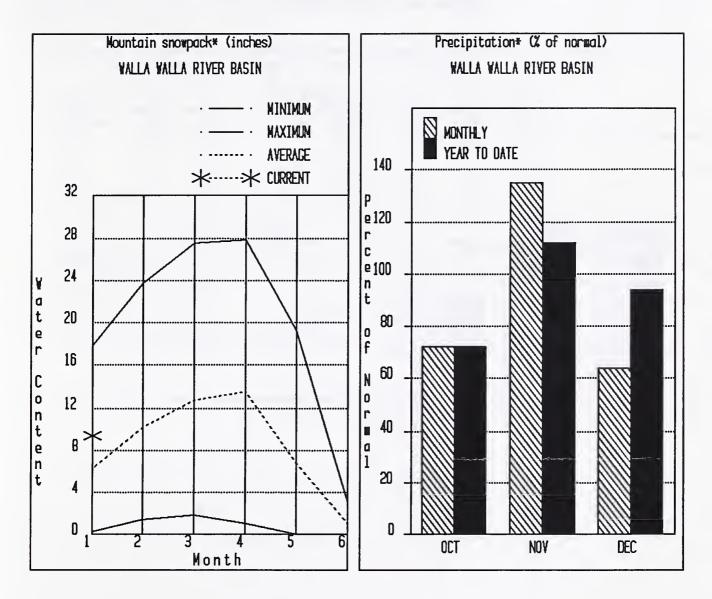
٠		< D	rier	- Fut	ure Condi	tions	Wetter	>>	
Forecast Point	Forecast			Ch	ance Of E	Exceeding * ==			
	Period	90%	70%	5	0% (Most	Probable)	30%	10%	30-Yr Avg.
		(1000AF)	(1000AF)	i		(% AVG.)	(1000AF)	(1000AF)	(1000AF)
LAKE KEECHELUS INFLOW	APR-JUL	81	103		118	95	133	155	124
	APR-SEP	97	112	İ	128	95 j	144	159	135
	APR-JUN	74	91	İ	103	94	115	133	109
KACHESS LAKE INFLOW	APR-JUL	71	91		105	95	119	139	111
	APR-SEP	83	97	i	112	95	127	142	118
	APR-JUN	68	84	į	95	96	106	122	99
CLE ELUM LAKE INFLOW	APR-JUL	295	360		400	98	440	505	409
Jan Main Made In Son	APR-SEP	315	395	- 1	440	98	485	540	
				-					448
	APR-JUN	255	305	-	335	97	365	415	345
YAKIMA RIVER at Cle Elum	APR-JUN	500	610	i	680	94	750	860	721
	APR-JUL	560	690		780	94 j	870	1000	832
	APR-SEP	660	765	į	860	94	955	1050	915
BUMPING RIVER nr Nile (1)	APR-SEP	79	110		127	93	144	175	136
(-,	APR-JUL	66	100	i	115	93	130	164	124
	APR-JUN	56	84	i	97	93	110	138	104
AMERICAN RIVER nr Nile	APR-SEP	71	92	-	107	91	122	143	118
BENZER KITAK BI MILE	APR-JUL	66	86	- 1	99	91	113	132	109
	APR-JUN	56	73	i	84	91	95	112	92
FIETON RIVER at Tieton (1)	APR-SEP	135	191		220	93 1	250	305	237
HISTON RIVER At HECON (1)	APR-JUL	106	161	- 1	186	93	210		_
	APR-JUN	85	130		150	93	170	265 215	200 162
NACHES RIVER nr Naches (2)	APR-SEP	510	670		780	94	890	1060	832
ACTIES RIVER III Nacties (2)	APR-JUL	465	610	-	710	94	810	955	755
	APR-JUN	400	525	-	610	94	695	820	651
COMMIN COPEY or Marriag (2)	ADD CED	10.0	22	-	40	87	40	61	46
AHTANUM CREEK nr Tampico (2)	APR-SEP	19.0	32	- !	40		49	61	46
	APR-JUL APR-JUN	18.0 16.0	29 25	-	37 32	88   89	45 39	56 49	42 36
				İ		. !			
AKIMA RIVER nr Parker (2)	APR-SEP	1170	1540	!	1790	90	2040	2410	1994
	APR-JUL APR-JUN	1070 950	1400 1240	-	1620 1440	90   90	1840 1640	2170 1930	1805 1597
				i		i			
YAKIMA RIVER BASI	 1				 I	YAKIMA RIV	ER BASIN		
Reservoir Storage (10	000 AF) - End						wpack Analysi		
	Usable		le Storage		 		Number		ear as % of
Reservoir	Capacity		Last		Water	shed	of		
	i	Year	Year	Avg	İ		Data Sit	es Last Y	_
æechelus	157.8	34.8	80.1	83.0	!	a River	14	132	119
ACHESS	239.0	47.2	129.5 1	59.1	   Ahtan	um Creek	2	202	150
LE ELUM	436.9	56.5	224.9 2	30.2					
UMPING LAKE	33.7	4.2	6.6	6.3					
IMROCK	198.0	44.4	64.3 1	02.1	i I				
					İ				

<sup>\* 90%, 70%, 30%,</sup> and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

<sup>(1) -</sup> The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

<sup>(2) -</sup> The value is natural flow - actual flow may be affected by upstream water management.

# Walla Walla River Basin



\*Based on selected stations

January 1 snowpack is at 149% of normal. The Touchet SNOTEL site has 17.6 inches of water, the normal January 1 reading for this site is 12.9inches. December precipitation was 64% of average, bringing the year to date precipitation to 94% of normal. SNOTEL sites are showing a year to date precipitation of 115% of average. The forecast is for 85% of average streamflow in the Walla Walla River for the coming summer, the Grande Ronde, 99%; Snake River, 85%, and 93% for Mill Creek. December streamflow was 27% of normal on the Walla Walla River, 53% for the Snake River, and 44% on the Grande Ronde River near Troy. Temperatures were two degrees below average for December.

#### WALLA WALLA RIVER BASIN

#### Streamflow Forecasts - January 1, 1993

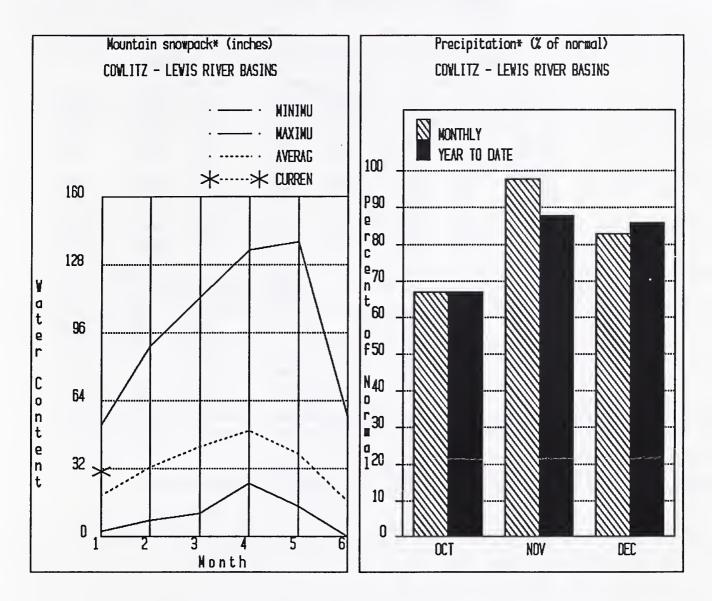
======================================								
		<<===== 	Drier	Future Co	onditions ==	Wetter	>>	
Forecast Point	Forecast			Chance Of 1	Exceeding * =			
	Period	90% (1000AF)	70% (1000AF)		Probable) (% AVG.)		10%   (1000AF)	30-Yr Avg. (1000AF)
SNAKE bl Lower Granite Dam (1,2)	APR-JUL	7580	14900	18300	85	21700	29200	21650
	APR-SEP	8530	16800	20600	85	24400	32800	24360
MILL CREEK at Walla Walla	APR-SEP	6.1	11.9	15.9	93	19.9	26	17.1
	APR-JUL	5.9	11.7	15.7	93	19.7	26	16.9
	APR-JUN	5.9	11.7	15.6	93	19.5	25	16.7
				·				
WALLA WALLA RIVER B Reservoir Storage (100		of Decembe	r	}		LLA RIVER BASI nowpack Analys		ту 1, 1993
Reservoir	Usable   Capacity		e Storage **	•	rshed	Number of	r This	Year as % of
	i	Year	Year Av	7g		Data Si	tes Last	Yr Average
				Mill	Creek	2	134	149

<sup>\* 90%, 70%, 30%,</sup> and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

<sup>(1) -</sup> The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

<sup>(2) -</sup> The value is natural flow - actual flow may be affected by upstream water management.

# Cowlitz - Lewis River Basins



\*Based on selected stations

January 1 snow cover for the Cowlitz-Lewis River Basin is 160%. The Paradise Park SNOTEL contained the maximum water content for the basin with 31.8 inches of water. Normal January 1 water content is 23.6 inches. Forecasts for summer runoff in the Lewis River are 96%, and for the Cowlitz River, 88%. December streamflow on the Cowlitz River was 42% of average, and 45% on the Lewis River. December precipitation was 83% of normal, bringing the water year-to-date precipitation to 86% of average. Temperatures were two degrees below normal for December.

# COWLITZ - LEWIS RIVER BASINS

#### Streamflow Forecasts - January 1, 1993

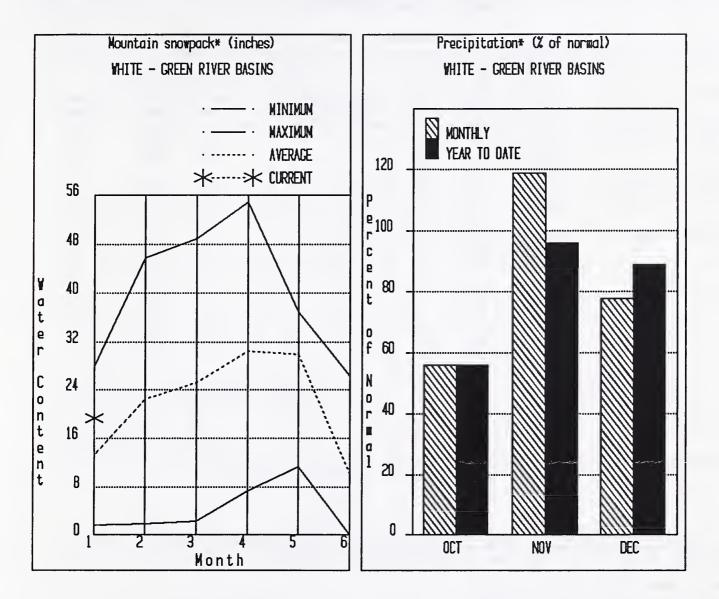
Forecast	<<=====	Drier	- Future Co	nditions	Wetter	====>> i	
Forecast							
			Chance Of E	xceeding * =			
Period	90%	70%	50% (Most	Probable)	30%	10%	30-Yr Avg.
İ	(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)	(1000AF)
APR-SEP	420	950	1160	96 j	1370	1890	1204
APR-JUL	560	825	1010	96	1190	1460	1051
APR-JUN	500	740	900	96	1060	1300	933
APR-SEP	355	1360	1730	88 i	2100	3090	1970
APR-JUL	725	1200	1520	88	1840	2320	1731
APR-JUN	620	1020	1300	88	1580	1980	1477
APR-SEP	425	2060	2330	87	2600	4240	2667
APR-JUL	1440	1780	2020	87	2260	2600	2325
APR-JUN	1240	1540	1740	87   	1940	2240	1995
VER BASINS		·		COWLITZ -	T.PWTS DTUPD	BASTNS	
	of Decembe	r	i				у 1, 1993
Usable	*** Usabl	e Storage **	*		Numbe	r This	Year as % of
Capacity	This	Last	Water	shed	of		
1	Year	Year Av	g		Data Si	tes Last	Yr Average
			Cowli	tz River	6	156	145
			Lewis	River	4	292	182
	APR-JUL APR-JUN  APR-SEP APR-JUL APR-JUN  APR-SEP APR-JUL APR-JUN  VER BASINS  00 AF) - End	APR-SEP 420 APR-JUL 560 APR-JUN 500  APR-SEP 355 APR-JUL 725 APR-JUN 620  APR-SEP 425 APR-JUL 1440 APR-JUN 1240  VER BASINS 00 AF) - End of Decembe  Usable   *** Usabl Capacity   This	APR-SEP 420 950 APR-JUL 560 825 APR-JUN 500 740  APR-SEP 355 1360 APR-JUL 725 1200 APR-JUL 725 1200 APR-JUN 620 1020  APR-SEP 425 2060 APR-JUL 1440 1780 APR-JUL 1440 1780 APR-JUL 1240 1540  VER BASINS 00 AF) - End of December  Usable   *** Usable Storage ** Capacity This Last	APR-SEP 420 950 1160 APR-JUL 560 825 1010 APR-JUN 500 740 900  APR-SEP 355 1360 1730 APR-JUL 725 1200 1520 APR-JUN 620 1020 1300  APR-SEP 425 2060 2330 APR-JUL 1440 1780 2020 APR-JUL 1240 1540 1740  VER BASINS 00 AF) - End of December  Usable   *** Usable Storage ***   Capacity   This Last Water Year Avg	APR-SEP 420 950 1160 96   APR-JUL 560 825 1010 96   APR-JUN 500 740 900 96   APR-SEP 355 1360 1730 88   APR-JUL 725 1200 1520 88   APR-JUN 620 1020 1300 88   APR-JUN 620 1020 2330 87   APR-SEP 425 2060 2330 87   APR-JUL 1440 1780 2020 87   APR-JUL 1440 1780 2020 87   APR-JUN 1240 1540 1740 87    VER BASINS COWLITZ - 00 AF) - End of December Watershed Snow	APR-SEP 420 950 1160 96 1370 APR-JUL 560 825 1010 96 1190 APR-JUN 500 740 900 96 1060  APR-SEP 355 1360 1730 88 2100 APR-JUL 725 1200 1520 88 1840 APR-JUN 620 1020 1300 88 1580  APR-SEP 425 2060 2330 87 2600 APR-JUL 1440 1780 2020 87 2260 APR-JUN 1240 1540 1740 87 1940  VER BASINS COWLITZ - LEWIS RIVER Watershed Snowpack Analys  Usable *** Usable Storage *** Watershed of Year Year Avg Data Si  Cowlitz River 6	APR-SEP 420 950   1160 96   1370 1890 APR-JUL 560 825   1010 96   1190 1460 APR-JUN 500 740   900 96   1060 1300  APR-SEP 355 1360   1730 88   2100 3090 APR-JUL 725 1200   1520 88   1840 2320 APR-JUN 620 1020   1300 88   1580 1980  APR-SEP 425 2060   2330 87   2600 4240 APR-JUL 1440 1780   2020 87   2260 2600 APR-JUN 1240 1540   1740 87   1940 2240  VER BASINS   COWLITZ - LEWIS RIVER BASINS  Usable   *** Usable Storage ***   Watershed Snowpack Analysis - Januar  Usable   *** Usable Storage ***   Watershed of

<sup>\* 90%, 70%, 30%,</sup> and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

<sup>(1) -</sup> The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

<sup>(2) -</sup> The value is natural flow - actual flow may be affected by upstream water management.

# White - Green River Basins



\*Based on selected stations

January 1 snowpack was 116% of normal in the White River Basin and 160% in the Green River Basin. Water content on January 1 at the Stampede Pass SNOTEL, at an elevation of 3860 feet, was 23.7 inches. This site has a January 1 average of 16.7 inches. December precipitation was 78% of normal, bringing the water year to date to 89% of average. Summer runoff is forecasted to be 91% on the Green River and 94% on the Cedar River. New forecast points have been added to the tables and include the Rex River at 96%, the South Fork of the Tolt River at 98% and the Cedar River at Cedar, 96%. Temperatures were two degrees below average for December.

#### WHITE - GREEN RIVER BASINS

#### Streamflow Forecasts - January 1, 1993

		<<=====	Drier ====	F	uture Co	onditions •		Wetter	====>>		
Forecast Point	Forecast	 		- Cha	nce Of E	Exceeding *				-	
10200002 10200	Period	90%	70%			Probable)		30%	10%	1 30	-Yr Avg.
		(1000AF)	(1000AF)	•	•	(% AVG.)	•	1000AF)	(1000AF		(1000AF)
GREEN RIVER below Howard Hanson Dam	ADD_TIT	165	205	.	235	91	·	265	305		257
GREEN RIVER DEIOW HOWARD HARSON Dam	APR-SEP	177	225	i	260	91	i	295	345		285
	APR-JUN	154	191	i	215	92	į	240	275		234
CEDAR RIVER near Cedar Falls	APR-JUL	45	61	!	72	94		83	99		77
CEDAR RIVER hear Cedar Falls	APR-SEP	49	67	1	79	93	1	91	109		85
	APR-JUN	46	57	i	64	94	i	71	82		68
REX RIVER nr Cedar Falls	APR-JUL	15.0	22		26	96		30	37		27
REA RIVER HI Cedal Falls	APR-SEP	17.0	24	1	29	97	1	34	41		30
	APR-JUN	15.0	20	i	23	92	i	26	31		25
CEDAR RIVER at Cedar Falls	APR-JUL	34	61		79	96	1	97	124		82
CEDAN RIVER de CEGGE TUTTS	APR-SEP	32	61	i	80	96	i	99	128		83
	APR-JUN	40	62	į	77	96	į	92	114		80
SOUTH FORK TOLT RIVER near Index	APR-JUL	11.5	13.5		14.9	98		16.3	18.3		15.2
	APR-SEP	13.3	15.7	i	17.4	98		19.1	22		17.8
	APR-JUN	9.7	11.5	į	12.8	98	į	14.1	15.9		13.1
WHITE - GREEN RIVER Reservoir Storage (1000		of Decembe	r			WHITE - Watershed S				uary 1,	1993
Reservoir	Usable		e Storage *	**	**- +			Number			as % of
Reservoir	Capacity	This Year	Last Year A	vg	Water	snea		of Data Si			Average
					White	River		2	10		116
				į	Cmar-	River			10		164
					Green	Kiver		6	19	1	164

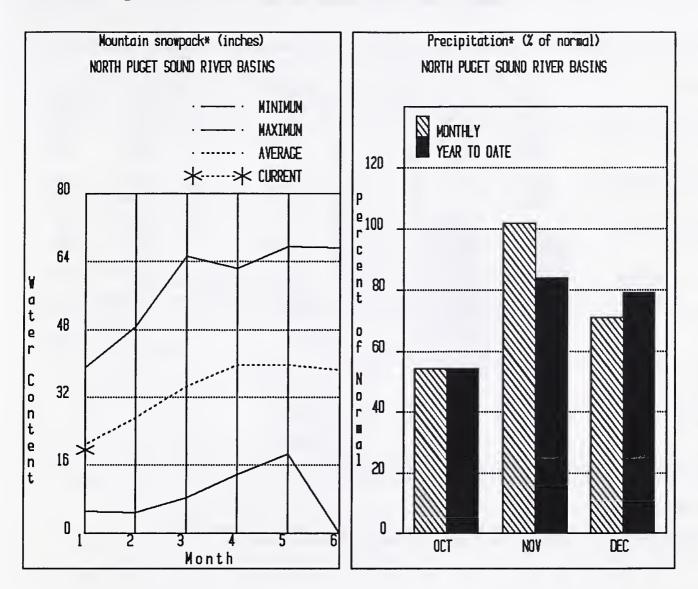
<sup>\* 90%, 70%, 30%,</sup> and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

Cedar River

<sup>(1) -</sup> The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

<sup>(2) -</sup> The value is natural flow - actual flow may be affected by upstream water management.

# **North Puget Sound River Basins**



\*Based on selected stations

January 1 snow cover in the Skagit Basin is 94% of normal. Rainy Pass SNOTEL at elevation 4780 feet, has 15.5 inches of water content; normal January 1 water content is 15.4 inches. January 1 reservoir storage is below average, with Ross Lake reservoir at 87% of normal and 49% of capacity. December streamflow in the Skagit River was 46% of average. Forecast for the Skagit River streamflow is 94% of normal for the spring and summer period. New forecast points have been added to the tables with the Baker River at 88% and Thunder Creek at 91%. Precipitation for December was 71% of average with a water year to date at 79% of normal. December temperatures were two degrees below normal.

#### NORTH PUGET SOUND RIVER BASINS

Streamflow Forecasts - January 1, 1993

		<<=====	Drier	Future Co	onditions =	Wetter	>>	
Forecast Point	Forecast Period	   90%   (1000AF)	70% (1000AF)	50% (Most	Exceeding * ' Probable) (% AVG.)	30%   (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
THUNDER CREEK near Newhalem	APR-JUL	178	197	210	91	225	240	230
	APR-SEP	260	285	300	91	315	340	328
	APR-JUN	105	123	135	91	147	165	149
SKAGIT RIVER at Newhalem (2)	APR-SEP	1470	1810	2050	94	2290	2630	2185
	APR-JUL	1230	1520	1720	94	1920	2210	1830
	APR-JUN	950	1170	1320	94	1470	1690	1410
BAKER RIVER near Concrete	APR-JUL	575	675	   740	89	l I 805	905	836
	APR-SEP	755	865	j 940	88	1020	1130	1064
	APR-JUN	410	485	540	88	595	670	611

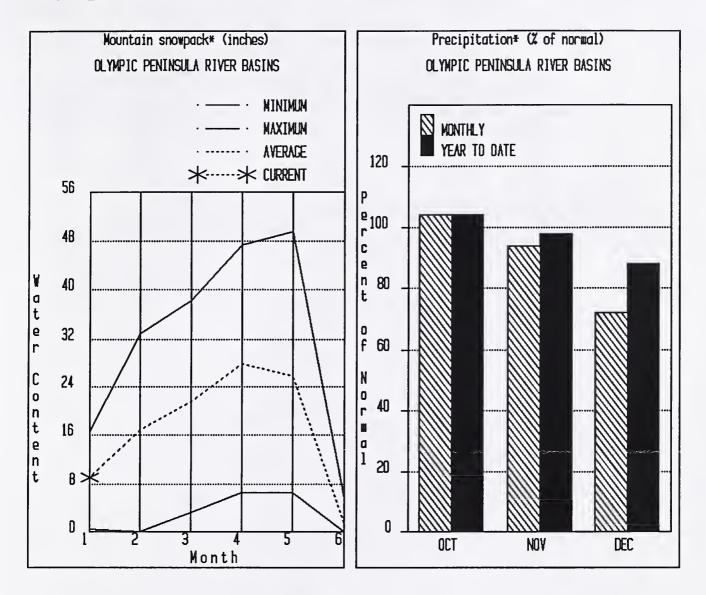
NORTH PUGET SOUND RIVER BASINS					NORTH PUGET SOUND RIVER BASINS					
Reservoir Storage (1000 AF) - End of December					Watershed Snowpack Analysis - January 1, 1993					
	Usable	*** Usable Storage ***				Number	This Year as & of			
Reservoir	Capacity	This Last			Watershed	of				
	i	Year	Year	Avg		Data Sites	Last Yr	Average		
ROSS	1404.1	681.8	1161.5	783.9	Snoqualmie River	1	140	110		
DIABLO RESERVOIR	90.6	85.6	87.1		Skykomish River	3	116	128		
GORGE RESERVOIR	9.8	8.0	7.9		Skagit River	3	77	94		
					Baker River	0	0	0		

<sup>\* 90%, 70%, 30%,</sup> and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

<sup>(1) -</sup> The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

<sup>(2) -</sup> The value is natural flow - actual flow may be affected by upstream water management.

# Olympic Peninsula River Basins



\*Based on selected stations

January 1 snow cover in the Olympic Basin is below normal based on data from the Mount Crag SNOTEL. The Mount Crag SNOTEL near Quilcene had 13.2 inches on January 1, last year it had 4.9 inches. January forecasts of runoff for streamflow in the basin are for 92% of average on the Dungeness River and the Elwha River, 95%. The Big Quilcene can expect normal runoff this summer. December precipitation was 72% of average, with water year-to-date precipitation accumulation at 88% of normal. December precipitation at Quillayute was 9.79 inches. Temperatures were two degrees below normal for December.

#### OLYMPIC PENINSULA RIVER BASINS

#### Streamflow Forecasts - January 1, 1993

		<<=====	Drier ====	Future Co	onditions ===	Wetter	>>	
Forecast Point	Forecast			- Chance Of I	Exceeding * ==			
	Period	90%	70%		Probable)	30%	10%	30-Yr Avg.
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)	(1000AF)
DUNGENESS RIVER nr Sequim	APR-SEP	115	134	147	92	160	179	160
•	APR-JUL	95	111	121	92	131	147	131
	APR-JUN	71	82	90	92	98	109	98
ELWHA RIVER nr Port Angeles	APR-SEP	365	430	l 1 475	95 I	520	585	502
22	APR-JUL	310	365	400	96	435	490	417
					1			
OLYMPIC PENINSUL	A RIVER BASINS				OLYMPIC PI	ENINSULA RIVE	RBASINS	
Reservoir Storage (	1000 AF) - End	of Decembe	er	i	Watershed Sno	owpack Analys	is - Januar	y 1, 1993
	Usable	*** Usabl	e Storage *	**		Numbe:	This	Year as & of
Reservoir Capacity		This Last			Watershed			
	I	Year	Year A	7g   		Data Si	es Last	Yr Average
				Elwha	River	0	0	0
				Morse	e Creek	0	0	0
				Dunge	eness River	0	0	0
				Quile	cene River	0	0	0
				Wynod	ochee River	0	0	0
						_	-	-

<sup>\* 90%, 70%, 30%,</sup> and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
 The value is natural flow - actual flow may be affected by upstream water management.

In addition to basin outlook reports, a Water Supply Forecast for the Western United States is published by the Soil Conservation Service and National Weather Service monthly, January through May. Reports may be obtained from the Soil Conservation Service, West National Technical Center, 511 Northwest Broadway, Room 248, Portland, OR 97209-3489.

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# The Following Organizations Cooperate With The Soil Conservation Service In Snow Survey Work

Canada:

Ministry of the Environment, Water

Investigations Branch, Victoria, British Columbia

States:

Washington State Department of Ecology

Washington State Department of Natural Resources

Federal:

Department of the Army Corps of Engineers

U.S. Department of Agriculture

**Forest Service** 

U.S. Department of Commerce NOAA, National Weather Service U.S. Department of the Interior Bonneville Power Administration

Bureau of Reclamation Geological Survey National Park Service Bureau of Indian Affairs

Local:

City of Tacoma City of Seattle

Chelan County P.U.D.

Pacific Power and Light Company
Puget Sound Power and Light Company
Washington Water Power Company

Snohomish County P.U.D. Colville Confederated Tribes

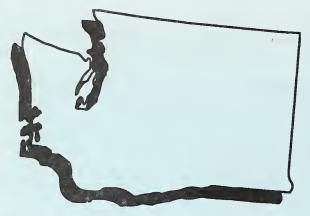
Spokane County Yakima Indian Nation

Private:

Okanogan Irrigation District

Wenatchee Heights Irrigation District Newman Lake Homeowners Association

Other organizations and individuals furnish valuable information for snow survey reports. Their cooperation is gratefully acknowledged.



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# Washington Basin Outlook Report

Soil Conservation Service Spokane, WA



SOIL CONSERVATION SERVICE

